

Spring 4-2018

Culturally Sensitive Diabetic Group Education

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California State University, Northern California Consortium Doctor of Nursing Practice

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DOI: <https://doi.org/10.31979/etd.ch2z-xbau>

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ABSTRACT

CULTURALLY SENSITIVE DIABETIC GROUP EDUCATION

This study assessed the effectiveness of a culturally sensitive type 2 diabetes group education program delivered to Hispanic women in Merced County. Design: A pre-test post-test design. Purposeful sampling was used. Fifteen Hispanic women from a Merced County outpatient clinic were invited to participate in a culturally relevant group education workshop over a 6-week period. Four ($N=4$) women accepted the invitation, completed the educational workshop, and participated in the assessments. Topics discussed in the education sessions included: (1) diabetic diet, (2) exercise, (3) blood sugar monitoring, (4) medication, and (5) preventative health. A knowledge check was completed by the participants before and after participation in the workshop to examine if any changes in diabetes self-management knowledge could be estimated.

Findings/Results: Outcomes demonstrated an increase in diabetes self-management knowledge from an average of 64.7% correct responses at baseline to 77.4% in correct responses at follow-up. All evaluation questions achieved an average score of four or more suggesting a high degree of satisfaction with the culturally tailored education. An inter-rater agreement of $\alpha=.76$ suggesting a fairly strong agreement regarding evaluation scores among the four raters. Finally, at 3-month follow-up, Hgb A1C levels showed a slight decline from 8.5 to 8.23 at 3-month follow-up. These outcomes collectively demonstrated that the culturally focused diabetes management educational workshop was successful with increasing diabetes self-management knowledge. Results of this pilot quality improvement project may be used to guide future efforts for developing diabetic education programs designed for the female Hispanic population in Merced County.

Kelly Marie Flores
April 2018

CULTURALLY SENSITIVE DIABETIC GROUP EDUCATION

by

Kelly Marie Flores

A project

submitted in partial

fulfillment of the requirements for the degree of

Doctor of Nursing Practice

California State University, Northern Consortium

Doctor of Nursing Practice

April 2018

APPROVED

For the California State University, Northern Consortium
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ACKNOWLEDGMENTS

I would like to express my deepest appreciation for those who contributed to the completion of this project.

Special thanks to my committee chair, Dr. Danette Dutra. Without her extensive knowledge, endless support, and constant encouragement this project would not have been possible. I would also like to thank my committee members Lynda Scales, FNP, and Anne Stokman, MSN.

Dr. Timothy Johnston hired me as a new nurse practitioner straight out of school with no real experience. He saw potential in me that I am not quite sure I even saw in myself at the time. He took me under his wing and helped me grow into the provider that I am today. He is a valuable asset to Merced County for his compassionate, knowledgeable, and spiritually guided care, and his willingness to share his knowledge with others. His encouragement and guidance made it possible for me to achieve this goal and many others. I am eternally grateful and thankful beyond what words can express.

I am thankful to my colleagues at Timothy Johnston and Associates for being so accommodating and encouraging, especially Mary Jane Sapien for assisting with this DNP project, always being willing to go on road trips with me for school, and being my left hand even when my right hand didn't know what it was doing.

Words cannot begin to express the gratitude that I feel to my family for their endless love and support. Their pride and love gave me strength and determination to push through. I am most grateful to my husband, my confidant, my biggest fan, my best friend. Thank you for being my study partner over the past 12 years, being the voice of reason I needed to hear at all the right moments, the constant shoulder to cry on whenever it was needed, and now a smile to share in this amazing accomplishment. Thank you

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CHAPTER 1: INTRODUCTION

Background

Diabetes is a chronic disease that continues to be one of the leading causes of death and disability in the United States. This chronic disease affects approximately 30.3 million adults or nearly 9.4 percent of the U.S. population (Centers for Disease Control [CDC], 2017). While diabetes affects all cultural groups, the Hispanic population suffers from a disproportionately higher prevalence of diabetes diagnosis than any other ethnic or racial group in the United States. The Centers for Disease Control and Prevention has identified Mexican Americans as nearly twice as likely to have diabetes and diabetes related complications than non-Hispanic whites (Valen, Narayan, & Wedeking, 2012).

Diabetes has been proven to be controllable through proper management of diet, exercise, medication, and monitoring of daily blood sugars. Complications from poorly controlled diabetes are often a consequence of poor management. One of the most pressing challenges with diabetes management among the Hispanic population is the delivery of proper health education (Pena-Purcell & Boggess, 2013). Hispanic patients often receive health education in a manner that is neither linguistically nor culturally relevant.

This project implements a culturally sensitive group approach to diabetic education for Hispanic women in Merced County. This effort will represent an effort to initiate solutions for delivering accessible health education to ease the burden of poorly controlled diabetes among this population.

Purpose

The purpose of this DNP project is to evaluate if group education delivered in a culturally sensitive format is an effective intervention for increasing the capacity of non-insulin dependent Hispanic women to self-manage their type 2 diabetic condition.

Objectives of the project are:

- Lower glycosylated hemoglobin readings (Hgb A1c)
- Improve patient reported knowledge regarding self-management of Type 2 diabetes
- Deliver health education with a high degree of patient satisfaction.

Diabetes educator resources are limited in many regions serving low income Hispanic communities, primary care providers practicing in counties such as Merced, must get creative on how to educate larger groups of patients about type 2 diabetes self-management. Group education is an alternative method of delivering the educational material to patients in an environment where they have interactions with peers who share the same cultural background (Thomas, 2012).

Theoretical Framework

The Integrated theory of health behavior change was utilized for this project. The foundation of this theory explains how a patient's behavior influences change. The theory has been used to guide education programming for self-managing chronic diseases such as diabetes. Polly Ryan (2009) integrated the concepts of several different theories including self-regulation theory, social support theory, and evidence-based concepts of related to the self-management of chronic disease to develop the integrated theory of health behavior change (ITHBC). This integrated model of health behavior observes that behavior is associated with interventions that address condition-specific knowledge and

health beliefs, foster an increase in self-regulation skills and abilities, and enhance social facilitation (Ryan, 2009; see Figure 1).

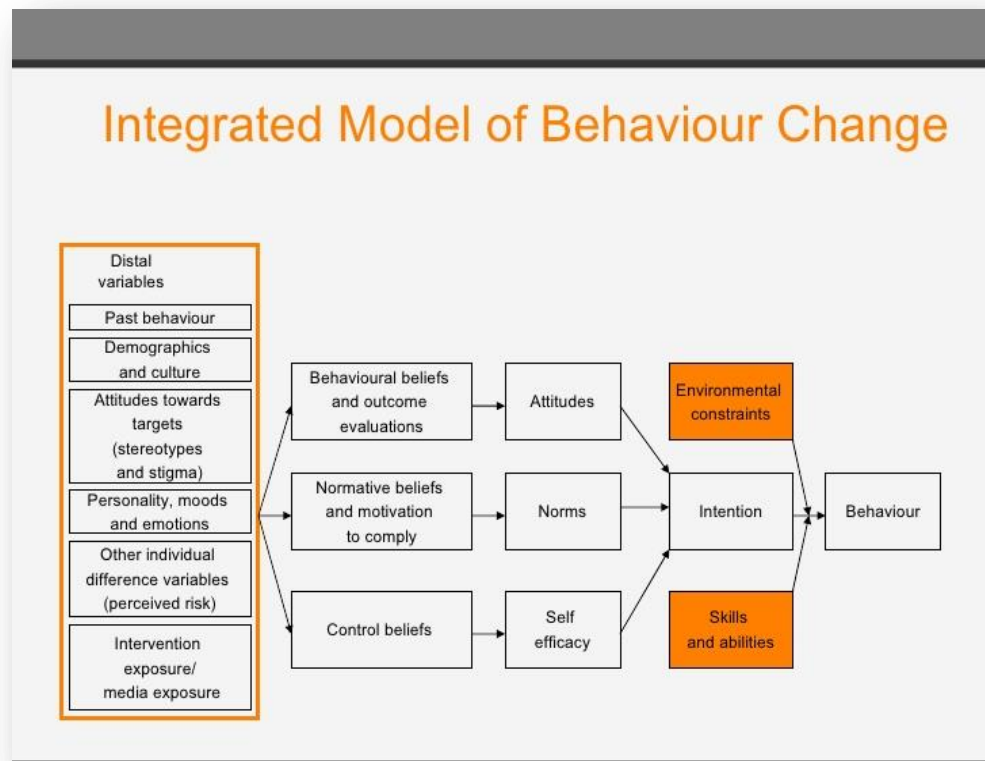


Figure 1. Integrated model of behavioral change by Polly Ryan (2009).
From: Dahl, S. (2009) Social Marketing Workshop. Retrieved from
<https://www.slideshare.net/stephan/health-social-marketing-workshop-1>

Research has shown that personal behaviors cause half of all chronic illnesses. Consequently, the foundation of the ITHBC is useful for changing negative behaviors, promoting positive behaviors, and facilitating change (Ryan, 2009). Examples of health promotion include smoking cessation, stress management, limiting alcohol consumption, and encouraging exercise and a well-balanced diet. By promoting positive health behaviors, patients start to change their perspective not only on their disease, but on their

ability to self-manage their disease. This theoretical framework assumes that a person's ability to change is initiated by the desire to change but requires motivation on the part of the patient for the change to take place. This theory is interactive and engages several members of the healthcare team. More importantly, it engages the patient understand that their behaviors influence their overall health status (Ryan, 2009).

ITHBC encourages self-management behaviors which are thought to be the short-term solution to a long-term problem of overall health improvement. Self-management and self-regulation are terms used to bring about change that is self-monitored and guided by way of goal setting, reflective thinking, and decision making, planning, and engaging (Ryan, 2009). The outcomes based on this theory are referred to as proximal and distal. The proximal outcomes are those that are self-directed and result in a more immediate change in behavior such as diet, exercise, and social interaction. The distal outcomes reflect the hard work and dedication that took place in the self-directed long-term improvement in overall health status.

ITHBC and DNP Project

This DNP project focuses on diabetes self-management and the education of participants with the goal of long-term self-management. The concept founded by ITHBC, that personal behaviors cause half of all diseases. Ryan (2009) promoted the concept that as positive behaviors are promoted, positive results will occur. Consistent with this concept, a culturally sensitive group approach that focuses on personal behavior change was developed. The belief that patients need to be motivated to avoid all temptations to effectively manage their diabetes was not assumed. Instead, focus remained on positive behaviors such as positive reinforcement, giving patients praise, and encouragement.

The proximal goal was to have patients complete the education sessions and acquire the knowledge to apply to the self-management of this chronic condition. Another goal was to provide traditional diabetes education from a cultural perspective to maximize the proximal and distal benefits to the participants although it is clear that goals will vary by participant. Decreasing the risk of complications related to uncontrolled diabetes is the most critical distal goal, although this outcome requires a longitudinal examination and cannot be measured within the limitations of this practice improvement project.

The ITHBC theory guided the project and focused teaching methods to best fit the needs of this patient population. Those with diabetes have a unique set of challenges, in that they are faced with having to manage a disease that is unrelenting and difficult to navigate in social and familial situations. Having self-management skills and tools is critical for responding to the many challenges that can have a major impact on those with diabetes.

Summary

Diabetes is one of the leading causes of disability in the United States. Diabetes affects all cultural groups, but disproportionately affects the Hispanic population. Culturally sensitive group education encourages peer-to-peer interaction and is an effective way to address diabetes self-management education and decrease complications from uncontrolled diabetes. ITHBC focuses on self- management behavior change and is often used for health promotion interventions such as smoking cessation. ITHBC encourages focus on positive behaviors that support self-management perceptions and progress.

CHAPTER 2: LITERATURE REVIEW

A literature search was conducted over 3,000 journal entries on the topic of diabetes education were identified. The most relevant studies pertaining to group education for Hispanics with type 2 diabetes mellitus were selected and reviewed. The purpose of conducting this literature search was to search for any gaps in research so that adjustments to the current project could be made to potentially address those gaps. Henry Madden Library at Fresno state and One Search database search engine was utilized. Search criteria used to search for peer reviewed articles between the years of 2012 and 2018 was culturally sensitive diabetic group education. Initial search resulted in 674 publications found using the search criteria mentioned. Articles were reviewed if the culture being studied was the Hispanic culture, participants had type 2 diabetes, and education was offered in a group format with a focus on self-management. Fifty-five publications were reviewed, four extensively due to similarities in methodology and to assess for gaps that may exist in current research.

Group Versus Individual Education

Rygg, Rise, Gronning and Steinbekk used a randomized controlled trial to study efficacy of ongoing group-based diabetes self-management education for participants with type 2 diabetes mellitus. A total of $N=146$ participants were randomly selected but were required to meet criteria including diagnoses and non-participation in any other type of diabetic group education in the previous 12 months (Ryan, 2009). Participants were either educated in a group setting (study group), or one on one in a traditional outpatient clinic environment (control group). The instruments that were used to collect data include blood pressure machine, glycosylated hemoglobin machine to assess Hgb A1C, lipid profile, self-reporting questionnaire to measure patient's knowledge and confidence

in self-management. Data were collected prior to and after the intervention to assess improvements. One sample *t*-test was used to measure if changes were noted at 12 months, and to test the proportional differences between groups. No statistical significance between the groups A1C readings was noted after 6 months, or 12 months. Those participants in the control group did have a decline in A1C readings in comparison to those participants in the intervention group. Both the control group and the intervention group showed improvement in knowledge, but the intervention group showed significantly higher levels of knowledge at both 6 months and 12 months more than the control group. A strength of the study was that both the intervention group and control groups were re-tested.

Motivational Interviewing

Serfontein and Mash (2013) conducted a qualitative study evaluating the effectiveness of a group diabetes education program delivered by health promoters using motivational interviewing. The health promoters were given the names of participants who attended 3 to 4 diabetic education sessions (cases and participants who were randomly selected from the list (controls). One male and 12 females were selected to be interviewed for the study. Interviews were conducted in the participant's home in two parts. The interviews looked at experience with education, communication style, information on diabetes, session structure, and organizational aspects (Serfontein & Mash, 2013).

The framework method and ATLAS.ti software were used to analyze qualitative data. Results show that participants reported a positive response in both the educational material and communication style. Participants were very positive about the group format, stating that the formatting allowed them to openly share their experiences with peers and to learn from others without the fear of being judged. One strength of the study

was that patients had already attended 3–4 diabetic education sessions before participating in this study. Knowledge and experience gained before the study was beneficial for giving informed feedback on their experiences.

Group Self-Management Education

Rise, Pellerud, Rygg, and Steinsbekk (2013) conducted a qualitative study to investigate how participants make and maintain lifestyle changes after participating in group-based diabetes self-management education courses. Fourteen women and nine men participated in the interviews. Seven respondents were interviewed in focus groups and 15 were interviewed individually. Several focus group participants expressed feeling that diabetes management was the responsibility of the health care practitioner and not the patients themselves. Study participants were selected from diabetes self-management courses at two separate hospitals. Data were collected through two focus group discussions and two survey periods. The first interview included information such as demographics, time since diabetes diagnosis, and treatment information. Participants stated that they gained new knowledge about their disease which leads to healthier lifestyle changes. Participants reported improvement in self-management of medications, physical activity, and controlling their disease.

Implications of the Evidence

The standard of treatment regarding the care of type 2 diabetic patients has shifted to self-management education. Type 2 diabetes is a disease that requires lifestyle modifications through diet, exercise, and glucose monitoring to prevent complications. As these studies demonstrate, the efficacy of self-management education and participant response to this style of intervention is quite favorable.

The Hispanic population has specific needs that the non-Hispanic population does not have. Cultural differences in cuisine, familial structure, and medical views, impact health behaviors and health outcomes (Pena-Purcell & Boggess, 2013). Building on the concept of diabetes self-management education, adding a culturally sensitive aspect to address the Hispanic population may result in an effective diabetic program for this population. Incorporating tradition Hispanic cuisine into the diabetic diet concept, utilizing exercise routines that are appealing to the Hispanic culture and focusing on community and the family dynamics are some ways that diabetes self-management education can be transformed into culturally sensitive education. Since the Hispanic population continues to be disproportionately affected by diabetes over other ethnicities, integrating a culturally sensitive aspect into diabetes self-management education seems only logical (Valen et al., 2012).

Summary

The three studies reviewed in this chapter demonstrate the effectiveness of diabetes self-management education in both a group setting and one on one. One common thread in all the studies is the relationship between motivation and group education. The participants who were motivated enough to learn self-care were more motivated and showed greater improvements in glycemic control. This parallels with the concepts reviewed in the ITHBC. Patients who are motivated to change their behaviors by focusing on the positive consequences are more likely to change, less likely to feel discouraged or give up. Culturally sensitive group education utilizes the foundational information of self-management education and group education, that has been well studied and proven effective at changing behaviors in type 2 diabetics (Pena-Purcell & Boggess, 2013). But it also incorporates the ITHBC by utilizing methods encouraged in

this theory such as peer-to-peer interaction, and positive motivational self-management education.

While there are numerous studies demonstrating the effectiveness of group self-management education, and the importance of continuing self-management education across ethnicities, research does not provide information on culturally sensitive group education for Hispanics. Therefore, the goal of this project was to create a culturally sensitive self-management group education program focusing on education for Hispanic women in Merced County. Assessment data which demonstrates improvements in knowledge, participant satisfaction with the educational workshop, and improvements in Hgb A1C levels have all been reported in the findings (Chapter 4).

CHAPTER 3: METHODOLOGY

The long-term goal of the project is to improve Hgb A1C levels and decrease complications related to poorly controlled diabetes among Hispanic females between 25 and 65 years of age. The immediate goal was for patients to experience improvement in self-management skills and knowledge after taking the culturally sensitive group education classes.

Project Design

This project utilized a pre-posttest design. Quantitative data consisted of categorical, numerical (Likert scale) responses, and a continuous test measure. The instruments used for project included Hgb A1C readings, pre-knowledge survey, post-knowledge survey, and a post-session evaluation survey.

Setting

The project was carried out at Timothy Johnston and Associates, a private practice clinic in Merced California. Timothy Johnston and Associates treat patients with various ailments including type 2 diabetes.

Recruitment

Participants were purposefully selected from Timothy Johnston and Associates. Purposeful sampling was conducted using strict inclusion and exclusion criteria. Convenience sample was utilized with purposeful selection of participants based on age, sex, ethnicity. Fifteen patients were identified as eligible for the project based on inclusion criteria and were invited to participate. Patients were contacted over the telephone, informed about the project briefly, asked to confirm their demographic

information (age, gender, ethnicity). Among those invited to participate, four accepted the invitation and completed the educational workshop and assessments.

- **Inclusion criteria:**

- Participant must be a woman
- Must identify as Hispanic
- Must be between the ages of 25 and 65
- Must have Type 2 Diabetes Mellitus diagnosis

- **Exclusion criteria:**

- Must not be on insulin
- Must not be currently pregnant
- Participants must be able to speak and read English, as education sessions and material will be delivered in English only.

Procedure

Participants were asked to attend three separate education sessions, one month apart, give a capillary blood sample for Hgb A1C readings, and complete several surveys. Requested activity dependent on the education session.

Management of Risks to Human Subjects

The risks, both physically and psychologically by participating in this project were minimal.

Sampling

Purposeful sampling was conducted to seek out participants meeting inclusion criteria, but participation in the project was voluntary and remained voluntary to entire length of the project. On the welcome letter participants were notified that support staff will be on hand to assist when completing the surveys if needed. If participants became upset while completing the survey they were offered to stop and move to the next item. All survey's anonymous and stored in the co-investigators home in a locked file cabinet. After the completion of the project the co-investigator will shred all surveys. Consent forms will be stored in a locked file cabinet in the home of the co-investigator. After six months of completing the last education session, the consent forms will be shredded. Demographic, response, and evaluation data will be stored in a locked file cabinet in the home of co-investigator for a period of three years, after which time all data will be shredded.

It is standard practice for capillary Hgb A1C readings to be drawn every 3 months in the outpatient setting, so the risk is comparative to standard outpatient diabetic screening practices. All participants were instructed to wash their hands prior to having their Hgb A1C drawn, and had the finger cleansed with alcohol prior to being penetrated with the lancet device to decrease the risk of infection. Participants were free to leave at any time, free to refuse to respond to any questions, or terminate their participation in the project whenever they chose. There was no adverse effect to refusal to participate in the project, or for withdrawing from the study prior to its completion. This DNP project was approved as having minimal risk to human subject by the California State University, Fresno Institutional Review Board on August 25, 2017.

Session 1. Participants were asked to arrive 15 minutes early so that informed consent could be reviewed prior to the completion of any surveys or blood collection for

Hgb A1C reading. Informed consent was reviewed before they were asked to sign the form. Outcomes of session 1 were discussed with participants and displayed on a power point slide projected onto a flat screen TV (See Appendix A).

Participants were given paper copy of a knowledge check survey and were asked to complete it both at the intervention sight (baseline) and at 3-month follow-up. After completion of the baseline perceived knowledge survey, participants were asked to give a capillary blood sample for running the initial Hgb A1C reading. Participants were given American Diabetic Association produced, approved, and reviewed brochures about carbohydrate counting, planning, and cooking heart healthy meals. Content was presented in power point format.

After the content was presented to the participants, questions were answered, and participants were given session 1 satisfaction survey to complete prior to leaving. The content delivery portion of session 1 took a total of 90 minutes to complete.

Session 2. Participants were asked ahead of time to come in comfortable clothing with sneakers on. Session 2 started by going over the outcomes for session 2 (See Appendix A).

Educational content was then presented in power point format regarding the importance of physical activity, and potential physical activity choices. A standardized handout produced, approved, and regulated by the American Diabetes Association was given out on exercising safely with diabetes.

Chairs in the waiting area of Timothy Johnston and Associates, where the project took place, were moved either against the wall or outside to allow for free movement of all participants and co-investigator. Participants were each given a 16-ounce bottle of cold water and led through a 5-minute series of stretches lead by the co-investigator.

Participants and co-investigator completed 30 minutes of *Zumba 101: Can't Dance?* (Perez, 2016).

After completion of the Zumba video participants were asked to complete a session 2 satisfaction survey. Session 2 was 60 minutes from start to completion.

Session 3. Session 3 starts with participants being given a paper copy of the post-perceived knowledge survey for completion. After completion of the post-perceived knowledge survey participants were asked to give the final capillary blood sample for running the final Hgb A1C reading. Outcomes for session 3 were then reviewed with the participants (See Appendix B).

Participants were given brochures produced, approved, and regulated by the American Diabetes Association:

- Foot Care
- Oral Care
- A1ceAG
- Standards of Care
- Taking care of Diabetes

After review of handouts was completed, content was presented to participants via power point presentation projected onto a flat screen TV.

After completion of content power point presentation participants were first given the session 3 satisfaction survey to complete. Content delivery, question, and answers for session 3 totaled 120 minutes, with an additional 30 minutes spent on completion of surveys. Upon handing in the session 3 satisfaction survey participants were given a case of Jamba Juice valued at \$15 dollars as a thank you for their participation.

Instruments

This project utilized data from three surveys administered to participants (See Appendix B). One of the surveys, the pre-perceived knowledge survey was created by this research team and is meant to discover baseline knowledge of diabetes self-management, as well as identify demographic data. While the post-perceived knowledge survey assesses for changes to knowledge in diabetes self-management once education has been completed. The final survey, the post-session evaluation survey was also created by this research team to assess satisfaction with each session. All three surveys discussed in further detail below.

Pre-Knowledge Survey

This survey includes 15 dietary and nine clinical questions about diabetes self-management knowledge. Demographic data was also asked at baseline. This survey was estimated to take about 10–15 minutes to complete. Responses are in a true or false format with an unsure option. Categorical responses were offered to assess attitudes and knowledge. Questions addressed diabetes and basic self-management knowledge, physical activity and physical health, diabetic diet and food choices, preventative health screenings and blood glucose monitoring (See Appendix B.).

Post-Perceived Knowledge Survey

The post-perceived knowledge survey asked the same questions as the pre-perceived knowledge survey given at session 3. This survey was estimated to take about 10–15 minutes to complete. The purpose was to assess if participants retained information presented to them in the educational sessions. Question format was the same as the pre-perceived knowledge survey except the demographic questions were not asked.

Evaluation

An evaluation was accomplished using the final post-session satisfaction survey. The evaluation took 5 minutes or less to complete and occurred at the completion of session three. Each question offered a Likert scale response options. Some participants chose to free text messages or suggestions to the surveyor, but it was not a requirement for completion of the survey. The objective of the final post-satisfaction survey was to assess for satisfaction with the sessions and included an open-ended question for feedback (See Appendix B).

Data Collection

Permission to conduct the research project was granted by Dr. Timothy Johnston, the sole owner of Timothy Johnston and Associates. Both the intervention and data collection occurred at Timothy Johnston and Associates private practice, Merced County. The health education workshop and data collection took place between October 28, 2017 and January 20, 2018.

The electronic health record system at Timothy Johnston and Associates was used to conduct a practice wide search for patients meeting the inclusion criteria. A list of 25 patients was generated from that initial search. A purposive (non-probability) sample was selected based on diagnosis and demographics. Of the 25 women initially identified during the purposeful sampling phase, eight met all of the inclusion criteria and were invited to participate in the project. Of those eight women, five expressed interest in participating in the project. A total of four women attended the first session and committed to completing the three sessions of the diabetes education series.

Upon arrival to each session, participants were greeted and given a folder with handouts for the session, knowledge and evaluation surveys. Completed surveys were placed in a large sealed envelope for data analysis. After sessions 1 and 3 capillary blood

samples were taken to test from Hgb A1C levels. The Hgb A1C results were shared with the participant and documented on a flow sheet for inclusion as outcome data for this study (Appendix C).

Data Analysis

Once all survey and Hgb A1C results were obtained, data analysis was ready to begin. Survey answers and A1C readings were recorded onto an excel sheet and transferred to Statistical Package for Social Services Sciences (SPSS) software for analysis.

Summary

Project participants completed baseline and follow-up knowledge surveys, offered capillary blood samples, and completed evaluations to help examine the efficacy of a culturally sensitive diabetic group education workshop. Comparative performance between baseline (pretest) and follow-up (posttest) quizzes was able to demonstrate the impact of providing culturally tailored diabetic self-management training for this particular group of female Hispanic diabetic patients. These findings offer some insight on the value of offering culturally sensitive education options to aid in decreasing complications from poorly controlled diabetes frequently experienced by Hispanic diabetic patients in Merced County.

CHAPTER 4: OUTCOMES

This project assessed effectiveness of a culturally sensitive diabetic education designed to reach female Hispanic diabetic patients in Merced County. A total of four participants completed a pre- and post-knowledge quiz and an evaluation for each session/topic. Hgb A1C readings were also collected at the beginning of session 1, and at the completion of session 3. Pretest, posttest, evaluation, baseline and 3-month follow-up Hgb A1C readings were analyzed using SPSS.

Demographics

At baseline, demographic data that was collected to assure that participants all met inclusion criteria. Demographic data collected included:

- Gender
- Sex
- Age
- Ethnicity
- Diabetes Diagnosis (Year)

Knowledge Assessment

- Pretest knowledge survey and posttest knowledge surveys contained the same questions in the same format in order to assess differences in knowledge acquired from the educational workshop

True or false questions were asked on topics including:

- Clinical management
 - Normal range for blood glucose reading, and testing recommendations
 - Follow-up recommendations
 - Exercise
 - Glucose management while ill
- Diet and Nutrition
 - Response to hyperglycemia
 - Asked to identify food belonging to food groups

Demographics

Demographic data collected includes age, sex, gender, dominant language (s) and length of time since being diagnosed with diabetes. The demographic description of the four respondents is below. All respondents were female and had a command of both English and Spanish. Half were under the age of 40, and half were 40 years of age or older. The length of time since being diagnosed with diabetes ranged from a low of 2 months to a high of 10 years, for an average of 3.6 years. Half of the respondents had been diagnosed over a year ago, and half had received their diagnoses within the past year (See Table 1).

Table 1. *Demographic Description of Diabetes Education Participants (N=4)***Table1.***Demographic description of diabetes education participants (N=4)*

Variable		N	Percent
Gender			
	Men	0	0
	Women	4	100
Age			
	Under 40	2	50
	Over 40	2	50
Years Dx Diabetic			
	Under 1 Year	2	50
	Over 1 Year	2	50
Primary Language			
	English	-	-
	Spanish	-	-
	Bi-lingual	4	100

Knowledge Assessment

Participants were asked to complete a pretest meant to assess baseline type 2 diabetes self-management knowledge. Four completed surveys were analyzed for correct responses to questions regarding clinical knowledge, diet, and exercise. The average of correct responses on the pretest knowledge survey was 67.9% for clinical knowledge, 62.5% for dietary knowledge and a total knowledge score of 64.7 percent.

Four participants completed the posttest knowledge survey. Posttest knowledge survey responses were evaluated for correct responses regarding clinical knowledge, diet, and exercise.

The average of correct responses on the posttest knowledge survey was 92.8% for clinical knowledge, 69.9% for dietary knowledge, and with a total knowledge score of 77.3 percent. An increase of 24.9% was found for clinical knowledge, demonstrating a statistically significant result $P=.009$. Dietary knowledge showed an increase of 7.4%, which was not found to be a statistically significant result. Total knowledge score increased 12.6%, demonstrating statistically significant result $P=.042$ (See Table 2).

Table 2. *Group Diabetes Education: Pre- and Posttest Scores, Change, and Significance (N=4)*

Table 2.

Group Diabetes Education: Pre and Post Test Scores, Change, and Significance (N=4)

	Pre	Post	Δ	Sig.
Clinical Knowledge	67.9	92.8	24.9	.009
Dietary Knowledge	62.5	69.9	7.4	NS
Total Knowledge Score	64.7	77.3	12.6	.042

Evaluation Assessment

Post-session satisfaction surveys were given at the end of every education session. Purpose of this survey was to assess for satisfaction with the session. There were four questions on each of the three post-session satisfaction surveys for a total of 12 evaluation questions. Answer choices followed a 5-point Likert scale format:

- 1 - strongly agree
- 2 - agree
- 3 - neither agree or disagree
- 4 - disagree
- 5 - strongly disagree (See Figure 2)

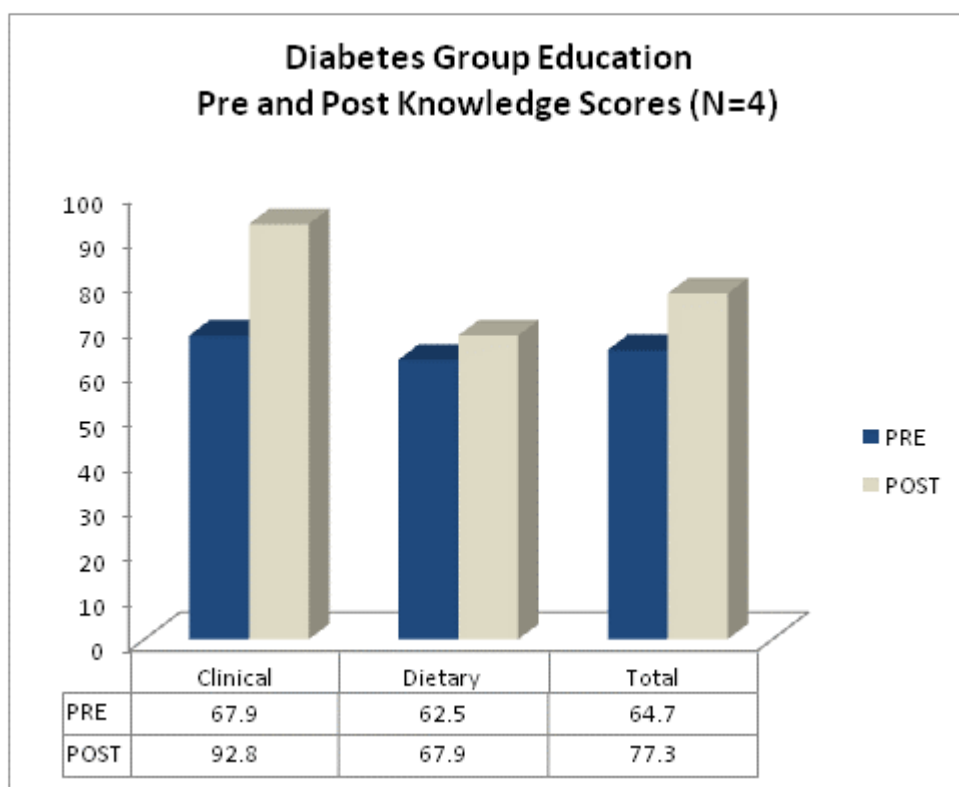


Figure 2. Diabetes group education pre- and post-knowledge scores (N=4)

Table 3. *Comparative Hgb A1C Measurements: Baseline and 3-month follow-up (N=4)*
Table 3.

Comparative Hgb A1C Measurements: Baseline and three month follow-up (N=4)

Study Arm	Average Hgb A1C	Δ	Sig
Pre- Intervention	8.23	.27	.140
Post-Intervention	8.50		

Glycemic Control Assessment

Two sets of Hgb A1C readings for each participant were obtained and compared. The average baseline reading for Hgb A1C was 8.50 percent. At 3-month follow-up the average reading was 8.23 percent. A *t*-test measured a .27 decline in A1C levels. While this decrease was encouraging, differences did not reach statistical significance ($P=.140$), likely due to the small sample size (See Table 4).

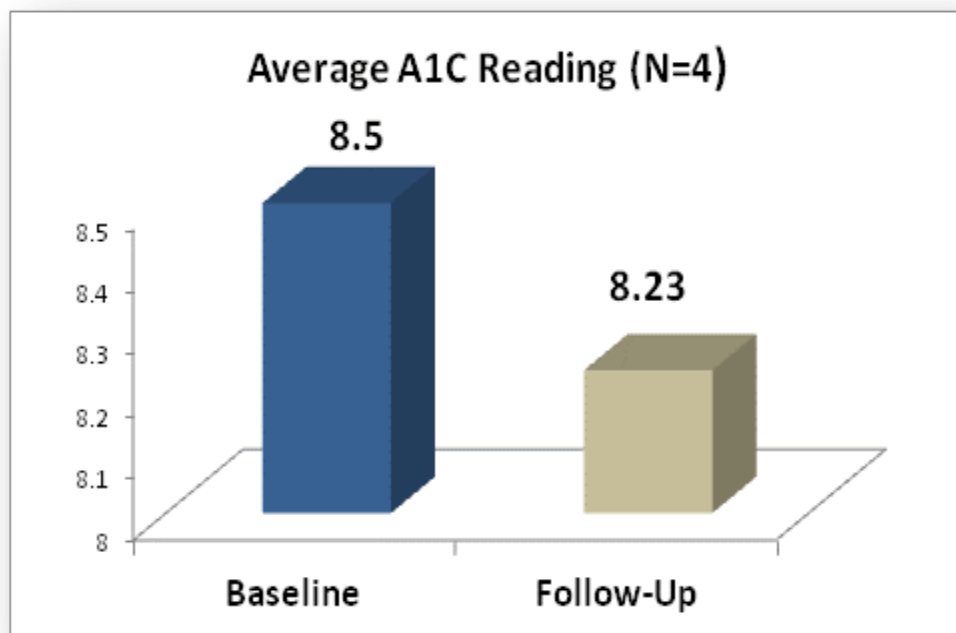


Figure 3. Average A1C levels at baseline and 3-month follow-up (N=4)

Questions asked on post-satisfaction survey included

- After this group education session, I feel well prepared to manage my type 2 diabetes?
- After this group session, I feel knowledgeable about (topic discussed during that session)?
- I feel the investigator addressed (topic discussed during that session) with specific concerns regarding my ethnicity?
- My overall satisfaction with the (topic discussed during that session)?

Analysis demonstrated an average satisfaction rating of 4.6 on the 12 evaluation items based on a 5-point Likert scale. The inter-rater agreement was measured at $\alpha=.76$ which suggests an acceptable level of agreement between the participants for satisfaction with the educational session. All respondents strongly felt that the training helped them to learn methods for diabetes self-management (See Table 4).

Table 4. *Evaluation of the Educational Workshop: Average Scores based on a 5-point Likert Scale (N=4)*

		Strongly Agree	Somewhat Agree	DK	Somewhat Disagree	Strongly Disagree	Avg.
session 1	After this group education session on Diet, I feel well prepared to manage my type 2 diabetes with my diet.	1	2	1			4.0
	After this group education session on Diet, I feel knowledgeable about food swapping	3		1			4.5
	I feel the investigator addressed diabetic diet with specific concerns regarding my ethnic diet	2	1	1			4.25
	My overall satisfaction with the group education on diet.	3		1			4.5
session 2	After this group education session on physical activity, I feel well prepared to manage my type 2 diabetes.	4					5.0
	After this group education session on physical activity, I feel well knowledgeable about physical activity options.	4					5.0
	I feel the investigator addressed physical activity with specific concerns regarding my ethnic diet	3	1				4.75
	My overall satisfaction with the group education on physical activity	4					5.0
session 3	After this group education session on ongoing management, I feel well prepared to manage my type 2 diabetes	3	1				4.75
	After this group education session, I feel knowledgeable about food care, oral care, glucose monitoring, and medication	3	1				4.75
	I feel the investigator addressed ongoing management with specific concerns regarding my ethnic diet	3	1				4.75
	My overall satisfaction with the group education on diet	4					5.0

Data Analysis and Discussion

The goal of data collection for this project was to assess if delivery of diabetes self-management education in a culturally sensitive format can impact knowledge retained and improve glycemic control. A second aim of data collection was to assess if participants were satisfied with this method of instruction.

Outcomes of the knowledge survey responses demonstrated an increase in diabetes self-management knowledge from an average score of 64.7% at baseline to 77.4% at follow-up. While the overall 7.4% increase in the overall score was not significant. Participants responded to knowledge questions that corresponded to each separate health education session. When clinical and dietary knowledge were analyzed separately it was found that participants had a stronger grasp of clinical information than dietary information. This data suggests that dietary/nutritional information was a more difficult concept for this group to understand. Application to cooking and changes in food consumption may be even harder. Results emphasize the importance of offering an ongoing dietary and cooking education as part of diabetes self-management efforts.

The data demonstrated participants had a stronger recall for clinical information indicating if participants are being told guidelines to remember, or what their glucose readings should be then they are more likely to retain and apply this information. The strong increase in clinical knowledge demonstrates that with reminders at follow-up visits every 3 months, participants have the potential to be more proactive in the management aspect of their disease and thus maintain tighter glycemic control the Hgb A1C samples measured a decreased from 8.5% at baseline to 8.23% at 3-month follow-up. This²⁷ decrease is an encouraging indicator of positive change although but the difference was not statistically significant ($p=.140$) likely due to the small sample size of four participants. While the long-term goal is to see a continual decrease in Hgb A1C levels over time.

Finally, all evaluation questions achieved an average score of 4 or higher, suggesting strong satisfaction with the culturally tailored education. The inter-rater agreement score of $\alpha=.76$ further suggested a fairly strong agreement regarding evaluation scores among the four raters. This supports the proposed theory that participants will respond favorably to diabetes self-management when content is presented in a culturally sensitive format. By delivering health education in a format that meets the cultural needs of the participant, the likelihood for retaining self-management knowledge is increased.

The data obtained in the knowledge assessments, evaluation survey, and Hgb A1C samples, suggest that the projects goals of identifying the efficacy of a culturally sensitive diabetes self-management education workshop were met. The next chapter will discuss limitations of the surveys, and recommendations for application of this project to current clinical practice.

CHAPTER 5: CONCLUSION

This health care improvement project achieved its goal of implementing a culturally sensitive diabetes self-management education program for Hispanic women with type 2 diabetes. The health education sessions were specifically designed to educate Hispanic women about diabetes self-management education. The sessions included culturally relevant aspects such as food choices, food preparation, and physical activities familiar to the local target group. The ITHBC guided the intervention phase of this project and focused teaching methods to best fit the needs of this population.

The results of the knowledge assessments can be used to develop future efforts to develop comprehensive curricula with the goal of improving overall diabetes self-management knowledge, clinical knowledge, and dietary knowledge. This study utilized self-management education in a group format to encourage a change in knowledge and behaviors regarding diabetes self-management targeting the health care facility's female Hispanic patient population residing in Merced County.

The population served by this health care facility is predominantly Hispanic. The total population size of Merced County is 255,793 in 2018 of which an estimated 140,485 (55%) are of Hispanic origin (Suburban Stats, 2018). Epidemiological data suggests that Hispanics are twice as likely to be diagnosed with type 2 diabetes and diabetes related health problems than any other ethnic group (Valen et al., 2012). These figures clearly support the need for providing self-management education in a format that is culturally relevant for this group. Results from this project were found to be useful for contributing to diabetes control among a population at disproportionately high risk.

Limitations

There were some design flaws and research limitations identified with this project. Primarily, only having four participants was a limitation. It was originally anticipated that approximately 15 individuals would participate. However due to strict inclusion criteria and difficulty with committing to a three- month intervention, only eight women qualified and four women committed to participating. The demographic data was limited to age, gender, ethnicity, language orientation, time since diabetes diagnosis. Marital status and number of children would have been helpful information to know since empirical studies have shown significant relationships between social supports a family provides patients with practical management and living with diabetes. This information would have been used to fine tune the diabetic diet education information specifically for participants with families or children based on the data collected.

Results based on four participants revealed positive findings in terms of diabetes self-management knowledge scores (64.7% to 77.4%) and a decrease in average Hgb A1C levels (8.5% to 8.2 %) with in a three- month period. While the sample size was too small to measure statistically significant differences, the findings clearly demonstrate the benefits of providing culturally sensitive diabetes self-management education delivered in a group setting. The knowledge assessment survey was created to assess knowledge prior and after exposure to the educational sessions.

Recommendations

Data from this project demonstrates that there is a significant need for ongoing education related to information on diabetic diet and food preparation. There is also a need for additional research on long-term information recall and the ability of patients to apply new knowledge to lifestyle modification. Finally, the educational workshops and health information were offered only in English. All participants reported themselves as

bilingual, therefore, the use of an interpreter or Spanish language material was not used. Future training and research efforts should be designed to include the Spanish only speaking population. Future initiatives should therefore involve use of a certified language interpreter and health education material written in Spanish.

Data collected from the evaluation survey demonstrates that participants were satisfied with the culturally sensitive aspect of the content delivery. A similar approach can be instrumental for use by other clinics that serve other underserved ethnic minority and immigrant groups experiencing high rates of diabetes cultural groups such as the Hmong. Future diabetic diet can change and be customizable based on cultural diversity.

Finally, insurance companies could use diabetes self-management group education as a cost-effective intervention. Since we know that improvement in diabetic knowledge leads to an improvement in glycemic control, and a decrease and the incidence of complications related to poorly controlled diabetes. Diabetes continues to be a problem that healthcare providers of Merced County must address. While there is no cure for diabetes, the disease can be managed. Complications from this disease are preventable with proper adherence to a diabetic diet, physical activity, and routine monitoring of blood glucose. Health care providers who serve the community of Merced County serve a very diverse and vulnerable population. By implementing cost-effective culturally sensitive group education programs, every patient can have improved access to tools that promote health and wellness while spending can also be reduced.

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APPENDICES

APPENDIX A: LEARNING MODULES

Session 1 Learning Module

Outcomes

- Participants will be able to verbalize understanding of diabetic diet
- Participants will be able to verbalize concept of culturally sensitive food swapping choices
- Participants will be able to verbalize differences between a carbohydrate, protein, and fat food sources

Information presented

- Review of the concept of moderation. It is okay to indulge once or twice a month but should be limited to this number.
- Discussed the plate method as a method of portion control. Half of the plate should be a non-starchy vegetable, one quarter of the plate should be a lean protein, one quarter of the plate should be a carbohydrate, one serving of fruit, and one serving of dairy, with a non-sugary beverage.
- Reviewed the major differences between the American Diabetic Association recommended diabetic diet, and tradition Hispanic cuisine. ADA diet is:
 - o Well balanced
 - o Low carb
 - o Higher in protein
 - o Lower in fat
 - o Minimal simple sugars
- While tradition Hispanic cuisine is:
 - o Unbalanced
 - o Carbohydrate heavy

- High fat meat choices
 - High fat diet leads to an increase in sugar cravings
- Examples of carbohydrates were given, and the differentiation was made between a simple carbohydrate and a complex carbohydrate.
- Simple carbohydrate
 - Sweets
 - Soda
 - Sugar
 - Honey
 - Jam
 - Candy
 - Fruit juice
- Complex carbohydrate
 - Whole grain bread
 - Tortillas
 - Pasta
 - Potatoes
 - Rice
 - Beans
 - Fresh fruit
- Examples of proteins were given with a clear differentiation between healthy protein options and unhealthy protein options.
- Healthy proteins
 - Fish
 - Chicken – boneless skinless
 - Lean pork – ham, Canadian bacon

- Lean beef – sirloin, round, flank steak
- Soy, tofu, black beans
- Unhealthy proteins
 - Dark meat chicken on the bone
 - Fatty cuts of meat, with visible fat
 - Pork
 - Sandwich meat with greater than 3 grams of fat
- Food swapping was then discussed. With several alternatives to traditional cuisine given as substitutions, or to replacements.
 - Instead of tacos rice and beans which is high in carbohydrates and fat, chose a taco salad due to lower carbohydrate content, and lower fat content.
 - Serving bowl size reviewed for soups such as menudo and pozole. Avoid eating a large bowl of menudo with several tortillas, instead eat from a smaller bowl with two corn tortillas. Also discussed albondigas, traditional Hispanic meat ball soup, as an option for lower carbohydrate and higher fiber than menudo.
 - Two pictures were shown, one of flan with traditional high fat sauce, and the other with a lower fat option containing fruit on top and a smaller portion size. This example was an example of moderation and making small changes to traditional cuisine can still make an impact on glycemic control.
 - Healthy breakfast option swaps – egg white omelet, with salsa and avocado topping instead of fried eggs and chorizo which is a higher fat, higher carbohydrate containing meal.
 - Snack option swaps – avocado dip with celery and carrots sticks instead of tortilla chips.
 - Dinner option swaps – Salad with grilled chicken, salsa, and avocado on top, or fish tacos with a side of black beans. This would be a great alternative to traditional tacos rice and beans.

- Traditional Mexican shrimp cocktail is a low carbohydrate healthy appetizer option if it is not eaten with tortilla chips, or fried tortillas.
- Suggested swapping out plain Greek yogurt for the traditional sour cream, making this a lower fat option.
- Discussed heart healthy ways to flavor food – boost flavor with herbs, broil, bake and roast, use healthy oil when cooking.
- Recommended participants eat three meals a day, with two snacks to prevent hypoglycemia.

Session 2 Learning Module

Outcomes:

- Participants will understand the importance of physical activity as it relates to diabetes self-management.
- Participants will verbalize different culturally sensitive exercise options, and different methods of exercise.

Information Discussed:

- Why exercise is important, and what exercise does to the body.
 - Makes cells more sensitive to the insulin
 - Insulin opens the cells
 - Blood glucose is lowered
- Recommendation for physical activity frequency and period.
 - Recommended 30–60 minutes of physical activity 3–4 times per week
- Physical activity options
 - The gym – can use exercise equipment like elliptical, or treadmill for cardio and weights for building muscle.
 - Jogging, power walking, running, swimming. These can be done as a family. Gave other family exercise options like bike riding and

horseback riding as the Hispanic culture is very family oriented and often do this as a family unit (Valen et al., 2012).

- Dance, yoga, Pilates, aerobics
 - Sports, extreme groups like cross fit
 - Work out videos that can be done at home, such as Zumba. This option is particularly popular in the Hispanic community due to the dance steps originating from dances such as the rumba and salsa known to be popular in the Hispanic culture. The background music being Hispanic music may also be more appealing to the Hispanic community.
- Chairs in the waiting area of Timothy Johnston and Associates, where the project took place, have been moved either against the wall or outside to allow for free movement of all participants and co-investigator. Participants were each given a 16-ounce bottle of cold water and led through a 5-minute series of stretches lead by the co-investigator. Participants and co-investigator completed 30 minutes of Zumba 101 Can't Dance? "No, Such Thing! I'll prove it." (Perez, 2016).

Session 3 Learning Module

Outcomes:

- Participants will verbalize understanding of oral care, foot care, and routine vaccinations
- Participants will verbalize understood factors affecting blood glucose
- Participants will verbalize understanding of oral hypoglycemic medication and the importance of taking the medication daily
- Participants will understand the signs and symptoms of hypoglycemia and hypoglycemia

Information Discussed:

- Things that can be done to keep blood glucose in range
 - Take medication daily

- Adhere to diabetic diet
- Stay physically active at least 3–4 times per week for 30 min
- Monitor blood glucose daily
- What makes blood glucose higher?
 - High carbohydrate meals or snacks
 - Not waiting 2 full hours between eating and checking blood glucose
 - Fever or illness
 - Stress
 - Sedentary lifestyle/not being physical active enough
 - Side effects of some medications
- Signs of hyperglycemia – excessive hunger, excessive thirst, and excessive urination. Also reviewed some factors that contribute to elevated blood glucose such as not eating, alcohol, too much medication, too much physical activity and not enough food.
- Signs of hypoglycemia – shaky, dizzy, sweaty, hungry, grouchy, confused, sleepy, and anxious. Review interventions for hypoglycemia including recommending eating if blood glucose levels of 50–70. If blood glucose is less than 50 chose a fast-acting glucose option and retest in 15 minutes, if blood glucose is still less than 70 repeats fast-acting glucose option.
- Reviewed when the best time for checking blood is – before breakfast in the morning, or 2 hours after eating.
- Discussed with participants that there are other times it is appropriate and recommended to check blood glucose. These times include:
 - When there are signs and symptoms of hypoglycemia or hyperglycemia
 - When sick
 - Before bed
 - Before a long drive, especially if participant is the driver
 - Before physical activity

- Review target goals for daily monitoring of blood glucose and for Hgb A1C readings. It is recommended that fasting blood glucose between 80–130, and 2-hour post-prandial blood glucose should be less than 180 (American Diabetes Association, n.d.)
- Review foot care recommendations:
 - Keep feet clean
 - Inspect feet everyday
 - Keep skin on feet soft by applying lotion, and don't walk barefoot
 - When trimming nails cut straight across and not too short
- Review of Oral Care Recommendations:
 - Brush teeth daily
 - Floss teeth daily
 - Get a dental checkup and professional cleaning every 6 months
 - Drink plenty of water to avoid dry mouth as this can be a side effect of many medications used to treat diabetes
 - Don't smoke
- Review of skin care recommendations:
 - Watch for open sores
 - Report any sores that are not healing, cracks in the skin, rashes, or changes in the appearance of the skin to your healthcare provider
 - Keep skin clean, dry, and moisturized
 - Avoid injury by wearing sun screen, but repellent when needed, and protecting the skin from puncture when possible.
- It is importance for type 2 diabetics to maintain a blood pressure of less than 140/90 to decrease to incidence of stroke and heart attack. Also maintain a total cholesterol less than 200, HDL greater than 50, triglycerides less than 150 and LDL less than 100.
- Ongoing preventative maintenance recommendations:

- Hgb A1c – checked every 3 months
- Lipid panel, and kidney function should be checked every 6 months if an abnormality has been detected, if not than every 12 months.
- Self-monitor blood pressure at home daily, and by healthcare provider every 3 months at routine follow-up visits.
- Stay up to date on vaccinations including yearly influenza vaccination, Tdap every 10 years, and pneumonia vaccination starting after age 65.
- Annual dilated eye exam

APPENDIX B: DIABETES MANAGEMENT

Diabetes Management: Knowledge Check

I. Clinical Care

Diabetes is a chronic Disease without a cure.

- ☐ True
- ☐ False
- ☐ Unsure

My blood glucose levels can be higher if I am sick with a cold.

- ☐ True
- ☐ False
- ☐ Unsure

If I exercise, my blood sugar will improve.

- ☐ True
- ☐ False
- ☐ Unsure

I should check my blood sugar ...

- ☐ Daily
- ☐ Weekly
- ☐ Monthly

The Normal range for fasting blood sugar is 80-120.

- ☐ True
- ☐ False
- ☐ Unsure

The Goal range for Hgb A1c is 6.5-7.5%.

- ☐ True
- ☐ False
- ☐ Unsure

Diabetics should have their eyes examined every year by an ophthalmologist.

- ☐ True
- ☐ False
- ☐ Unsure

Diabetics should have their cholesterol checked every year.

- ☐ True
☐ False
☐ Unsure

I. Diet and Nutrition

What I eat directly affects my diabetes.

- ☐ True
☐ False
☐ Unsure

If my blood sugar is high, that means I should not eat until it goes down.

- ☐ True
☐ False
☐ Unsure

Which of the following are considered a protein?

	YES	NO	UNSURE
Beans			
Chicken			
Cheese			
Steak			
Pork			
Soy			

Which of the following are considered a carbohydrate?

	YES	NO	UNSURE
Tortilla			
Rice			
Corn			
Bread			
Hominy			
Pasta			
Beans			

I think my understanding of Diabetes Self-Management is ...

- ☐ Excellent
☐ Fair
☐ Poor

Clinical: _____ %
Diet: _____ %
Total Score: _____ %

Evaluation Questions

		Strongly Agree	Somewhat Agree	DK	Somewhat Disagree	Strongly Disagree	Avg.
session 1	After this group education session on Diet, I feel well prepared to manage my type 2 diabetes with my diet.	1	2	1			4.0
	After this group education session on Diet, I feel knowledgeable about food swapping	3		1			4.5
	I feel the investigator addressed diabetic diet with specific concerns regarding my ethnic diet	2	1	1			4.25
	My overall satisfaction with the group education on diet.	3		1			4.5
session 2	After this group education session on physical activity, I feel well prepared to manage my type 2 diabetes.	4					5.0
	After this group education session on physical activity, I feel well knowledgeable about physical activity options.	4					5.0
	I feel the investigator addressed physical activity with specific concerns regarding my ethnic diet	3	1				4.75
	My overall satisfaction with the group education on physical activity	4					5.0
session 3	After this group education session on ongoing management, I feel well prepared to manage my type 2 diabetes	3	1				4.75
	After this group education session, I feel knowledgeable about food care, oral care, glucose monitoring, and medication	3	1				4.75
	I feel the investigator addressed ongoing management with specific concerns regarding my ethnic diet	3	1				4.75
	My overall satisfaction with the group education on diet	4					5.0

APPENDIX C. SESSION LOGS

Session Log

Project investigator Kelly Flores
 Assistant Mary Jane

sessions 10/27/2017, 11/18/17, 12/16/17

Initial Hgb A1c	Final Hgb A1c	Perceived Survey 1	Perceived Survey 2	Session 1 survey	Session 2 survey	Session 3 survey
11.5	10.9	✓	perceived ✓	✓	No show	✓

Investigator signature [Signature] Date 1/20/18

patient signature _____ Date _____

Consent - ✓

Session Log

Project investigator

Kelly Flores

Assistant

Mary Jane

sessions

10/27/2017, 11/18/17, 12/16/17

Initial Hgb A1c	Final Hgb A1c	Perceived Survey 1	Perceived Survey 2	Session 1 survey	Session 2 survey	Session 3 survey
7.2	7.1	✓	✓	✓	✓	✓

investigator signature

Date

1/20/18

Date

Consent ✓

Session Log

Project investigator

Kelly Flores

Assistant

Marydane

sessions

10/27/2017, 11/18/17, 1/20/18

Initial Hgb A1c	Final Hgb A1c	Perceived Survey 1	Perceived Survey 2	Session 1 survey	Session 2 survey	Session 3 survey
7.2	7.2	✓	✓	✓	✓	✓

investigator signature

Date

Consent ✓

Session Log

Participant

Street

Address

City, ST

Principal investigator

Name

Kelly Flores
Mary Jane

Sessions

10/27/2017, 11/18/17, 12/16/17

Initial Hgb A1c	Final Hgb A1c	Perceived Survey 1	Perceived Survey 2	Session 1 survey	Session 2 survey	Session 3 survey
8.1%	7.7%	✓	✓	✓	✓	✓

Investigator signature

Date

1/20/18

Consent - ✓